

AMENDMENTS TO THE CLAIMS

1-21. (canceled)

22. (currently amended) An article, comprising:

a steel spider comprising a hub, a plurality of angularly spaced trunnion shoulders extending from the hub, each having a trunnion shoulder surface, and a corresponding plurality of angularly spaced trunnions extending from ~~the plurality of~~ each trunnion shoulders, each trunnion having a trunnion axis and a trunnion surface, only a portion of the spider including the trunnion surfaces and the trunnion shoulder surfaces comprising a hardened case, wherein the hardened case is formed by an induction heat treatment. that is applied concurrently to a first pair that includes a trunnion shoulder surface and a trunnion surface that corresponds to said trunnion shoulder surface, and thereafter is applied to each such pair consecutively until each such pair has been heat treated

23. (cancelled)

24. (original) The article of claim 23-21, wherein the induction hardened case comprises a martensitic microstructure and the core comprises a microstructure that is a mixture of pearlite and ferrite.

25. (original) The article of claim 24, wherein the induction hardened case has a hardness of about R_C 58-63, and the core has a hardness of about R_C 15-30.

26. (original) The article of claim 24, wherein the martensitic microstructure is a tempered martensitic microstructure.

27. (original) The article of claim 26, wherein the tempered martensitic microstructure is formed by the induction heat treatment.

28. (original) The article of claim 27, wherein the tempered martensitic microstructure has a hardness of about R_C 58-63.

29. (original) The article of claim 28, wherein the depth of the case is about 1 - 2 mm.

30. (new) A method for heat treating a steel spider that includes a hub, a plurality of angularly spaced trunnion shoulders extending from the hub, each trunnion shoulder including a trunnion shoulder surface, and a plurality of angularly spaced trunnions, each trunnion extending from a respective trunnion shoulder, including a trunnion surface and having an axis, comprising the steps of:

(a) selecting an induction coil able to receive therein a trunnion surface and a trunnion shoulder;

(b) placing only a portion of the spider including the trunnion surface of a first trunnion and the respective trunnion shoulder surface in the induction coil;

(c) rotating the spider within the induction coil about the axis of the first trunnion;

(d) energizing the induction coil, thereby producing a magnetic field and heating the trunnion surface and trunnion shoulder surface of the first trunnion for a period sufficient to increase their temperature to at least a heat treatment temperature (T_H);

(e) withdrawing the first trunnion from the induction coil;

(f) repeating step (b) by placing a second trunnion in the induction coil; and

(g) repeating steps (c)-(f) for the second trunnion.

31. (new) The method of claim 30 wherein step (c) further includes rotating the spider at a selected speed.

32. (new) The method of claim 30 wherein step (d) further comprises producing a heat treatment temperature (T_H) at a selected case depth below the trunnion surface and the trunnion shoulder surface.

33. (new) The method of claim 30 wherein step (e) further comprises withdrawing the first trunnion from the induction coil at a selected rate.

34. (new) The method of claim 30 further comprising cooling the trunnion surface of the first trunnion and the respective trunnion shoulder surface to a temperature (T_C) at the selected case depth.

35. (new) The method of claim 30 further comprising:
repeating step (b) by placing a second trunnion in the induction coil; and
repeating steps (c)-(e) for the second trunnion.

36. (new) The method of claim 30 further comprising:
repeating step (b) by placing each trunnion of the spider in the induction coil sequentially; and
repeating steps (c)-(e) for each trunnion sequentially.

37. (new) A method for heat treating a steel spider that includes a hub, a plurality of angularly spaced trunnion shoulders extending from the hub, each trunnion shoulder including a trunnion shoulder surface, and a plurality of angularly spaced trunnions, each trunnion extending from a respective trunnion shoulder, including a trunnion surface and having a axis, comprising the steps of:

(a) selecting an induction coil able to receive therein a trunnion surface and a respective trunnion shoulder;

(b) placing the trunnion surface of a first trunnion and the respective trunnion shoulder surface in the induction coil;

(c) rotating the spider within the induction coil about the axis of the first trunnion;

(d) energizing the induction coil, producing a magnetic field, and heating the trunnion surface and trunnion shoulder surface of the first trunnion to produce at least a heat treatment temperature (T_H) at least a case depth below the trunnion surface and the trunnion shoulder surface;

(e) withdrawing the first trunnion from the induction coil;

(f) repeating step (b) by placing a second trunnion in the induction coil; and

(g) repeating steps (c)-(f) for the second trunnion.

38. (new) The method of claim 37 wherein step (c) further includes rotating the spider at a selected speed.

39. (new) The method of claim 37 wherein step (e) further comprises withdrawing the first trunnion from the induction coil at a selected rate.

40. (new) The method of claim 37 further comprising cooling the trunnion surface of the first trunnion and the respective trunnion shoulder surface to a temperature (T_C) at the selected case depth.

41. (new) The method of claim 37 further comprising:
repeating step (b) by placing a second trunnion in the induction coil; and
repeating steps (c)-(e) for the second trunnion.

42. (new) The method of claim 37 further comprising:
repeating step (b) by placing each trunnion of the spider in the induction coil sequentially; and
repeating steps (c)-(e) for each trunnion sequentially.